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EXAMINER	
ROSARIO-VASQUEZ, DENNIS	
ART UNIT	**PAPER NUMBER**
2621	10

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/786,477	SEMENCHENKO, MICHAIL GRIGORIEVICH	
	Examiner	Art Unit	
	Dennis Rosario-Vasquez	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _05/28/04_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-23_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-3,5-17 and 19-23_ is/are rejected.

7)☒ Claim(s) _4 and 18_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _28 May 2004_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment was received on May 28, 2004 and has been entered and made of record. Currently claims 1-23 are pending based on an interview summary regarding additional claims 24-26.

Specification

2. The substitute specification filed June 30, 2004 has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because:

A mark-up copy of the substitute specification needs to be submitted that shows the changes between the old specification to be replaced.

The sentences of the amendment filed on June 30, 2004, page 14, line 27 to page 15 and line 1 and page 15, line 4 with "dependencies", do not make sense. Suggest amending the sentences to conform to the context of page 14, lines 17-27 that mentions "dependence".

Response to Arguments

3. Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The term "comparing" in claims 1 and 6 is a relative term which renders the claim indefinite. The term "comparing" is not defined by the claim, the specification filed June 30, 2004 does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The word “comparing” could not be found in the specification in the context of claim 1, lines 14-16.

The word “comparing” according to the specification in the context of claim 1 is “dividing” as mentioned in the specification on page 13, lines 21-26 and page 14, lines 1-6.

The word “comparing” according to the specification in the context of claim 6 could mean “selecting” or “comparing”, but no support could be found for comparing the “corresponding correlation value to…said correlation values for corresponding…pixels of the other m-1 high frequency channels.” The specification compares a correlation value with a dividing method in page 13, lines 23,24 and a constant “1.0” in page 13, lines 24,25. Nowhere in the specification does a comparison is performed between two correlation values.

However, support for “comparing said corresponding correlation value to said first threshold value” in claim 6, lines 2,3 could be found in the specification from page 13, line 21 to page 14, line 6.

However, “comparing” is a form of “selecting” which is mentioned in the specification in page 7, lines 17,18. Therefore “comparing” ought to be amended to “selecting” so that the specification on page 7, lines 17,18 conforms to the context of claim 1, lines 14-16.

Regarding claim 7, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Objections

5. The following quotations of 37 CFR § 1.75(a) is the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

6. Claims 16,21,22 and 23 are objected to under 37 CFR § 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Claim 16, line 1 has “said threshold values” which has no antecedent basis. “said threshold values” ought to be amended to “said threshold value”.

Claim 21, lines 1 and 2 each contain “different threshold values are” and “said different threshold values”, respectively, have no antecedent basis.

The phrase “different threshold values are” for line 1 ought to be amended to “said different threshold value is”.

The phrase “said different threshold values” for line 2 ought to be amended to “said different threshold value”.

Claims 22 and 23, line 2 have "threshold values" which depends on the objected wording of "different threshold values" of claim 21. "threshold values" of claims 22 and 23 ought to be amended accordingly.

Appropriate action is required.

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show output arrows for numerals 11 and 14_0 of figure 2 as described in the specification.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of

any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1,2,5-17,19-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Li et al. (US Patent 5,602,934 A).

Regarding claim 1, Li et al. discloses the method of image processing, comprising the steps of :

a) providing an original image (fig. 3: X_0) as a matrix of discreet picture elements (pixels) (Window of five pixels in col. 6, lines 29,30.)

b) splitting said original image (fig. 3: X_0) into n frequency channels (fig. 4: and (X_{l0}) and (X_{h0})) each of said n channels (fig. 4: and (X_{l0}) and (X_{h0})) being presented by an image matrix of the same size as said original image,

c) detecting edges (Edges are detected or "chosen" from fig. 3: (Outputs $(X_{l1})^\wedge$ $(X_{l2})^\wedge$ $(X_{l3})^\wedge$ $(X_{l4})^\wedge$) as mentioned in col. 8, lines 29-34.), and

d) assembling (Fig. 4:SNS Processing) an output image (Fig. 4:Y_0) from said n frequency channels (fig. 4: and (X_{l0}) and (X_{h0})) taking said detected edges into account (Edges are detected or "chosen" from fig. 3: (Outputs $(X_{l1})^\wedge$ $(X_{l2})^\wedge$ $(X_{l3})^\wedge$ $(X_{l4})^\wedge$) as mentioned in col. 8, lines 29-34.),

wherein said splitting said original image (fig. 3: X_0) is performed **(formed)** into a low frequency channel (Fig. 4: (X_{l0}) is a low frequency channel) and n-1 high frequency channels (Fig. 4: X_{h0} is a high frequency channel formed from $(X_{h1})^{\wedge}$ $(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge}$) of fig. 4 which are the n-1 high frequency channels.),

wherein said detecting edges (Edges are detected or "chosen" from fig. 3: (Outputs $(X_{l1})^{\wedge}$ $(X_{l2})^{\wedge}$ $(X_{l3})^{\wedge}$ $(X_{l4})^{\wedge}$) as mentioned in col. 8, lines 29-34.) is performed by

c1) calculating in each of said n-1 high frequency channels ($(X_{h1})^{\wedge}$ $(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge}$) of fig. 4) for each pixel a correlation value (Fig. 4: (X_{h1}) or d_i is used for determining a difference or similarity between pixels as mentioned in col. 8, lines 29-43 and col. 11, lines 7-15.) between a processed pixel ($X_0(n_1,n_2)$ in equation 4 correspond to the "fifth" pixel as mentioned in col. 6, lines 27-29.) and its neighboring pixels ($X_{l1}(n_1,n_2)$ $X_{l2}(n_1,n_2)$ $X_{l3}(n_1,n_2)$ $X_{l4}(n_1,n_2)$ of equation 4 corresponds to "four nearest neighboring pixels" in col. 6, line 27.) followed by

c2) comparing **(selecting)** said correlation value (Fig. 4: X_{h1} in equation 17 can be replaced with the difference d_i which is selectable component as mentioned in col. 11, lines 57-59 and col. 11, lines 7-9.) with correlation values (Fig. 4: (X_{h2}), (X_{h3}), (X_{h4})) for the corresponding (by their location in the image) pixels (The difference of (X_{h1}) determines a relation between two pixels with respect to a location of an edge.) in other said high frequency channels ($(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge}$) of fig. 4) and with a first threshold value ("r" in col. 13, lines 33-54 is a threshold value used in each or all high frequency channels. Note that the difference has "r" for each channel as shown by 4 equations in col. 13, lines 40-47.) for this channel (Fig. 4: $(X_{h1})^{\wedge}$); and

c3) forming weighting coefficients (Fig. 4: W_{h1} W_{h2} W_{h3} W_{h4}) based on the results of said comparing **(selecting)** (Fig. 4: X_{h1} in equation 17 can be replaced with the difference d_i which is selectable component as mentioned in col. 11, lines 57-59 and col. 11, lines 7-9.) for each pixel of each of n-1 high frequency channels $((X_{h1})^{\wedge}$ $(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge})$ of fig. 4), and

said assembling (Fig. 4:SNS Processing) said output image (Fig. 4:Y_0) is made by summing ("added" in col. 11, lines 41-44) each pixel from said low frequency channel (Fig. 4: (X_{l0}) is a low frequency channel) with all the corresponding (by their location in the image) pixels of said n-1 high frequency channels $((X_{h1})^{\wedge}$ $(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge})$ of fig. 4) are added together and the result of the addition is added again to Fig. 4: (X_{l0})) multiplied (Fig. 4:"X") by their weighting coefficients (Fig. 4:W_{h1} ,W_{h2} ,W_{h3} ,W_{h4}).

Regarding claim 2, Li et al. discloses the method according to claim 1, wherein said forming weighting coefficients (Fig. 4: W_{h1} W_{h2} W_{h3} W_{h4}) for each pixel of said each of said n-1 high frequency channels $((X_{h1})^{\wedge}$ $(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge})$ of fig. 4) is made by ("the fifth step" in col. 14, lines 9-43) comparing (d_i is a difference which corresponds to D_m that is used for comparing through inequality operators the threshold "r" in "the fifth step" in col. 14, lines 26-35) said corresponding correlation value (Fig. 4: X_{h1}or d_i) to said first threshold value ("r" in col. 13, lines 33-54 and col. 14, lines 26-35 is a threshold value used in each channel.).

Regarding claim 5, Li et al. discloses the method according to claim 1, wherein m (three) of said n-1 high frequency channels $((X_{h2})^{\wedge} (X_{h3})^{\wedge} (X_{h4})^{\wedge})$ of fig. 4), where $2 \leq m \leq n-1$, are different from one another in a direction of their principal passing only $((X_{h2})^{\wedge} (X_{h3})^{\wedge} (X_{h4})^{\wedge})$ of fig. 4 are filtered based on directions for each channel as mentioned in col. 10, lines 2,3.).

Regarding claim 6, It et al. discloses the method according to claim 5, wherein said forming weighting coefficients (Fig. 4: W_{h1} W_{h2} W_{h3} W_{h4}) for each pixel of each of said m (three) high frequency channels $((X_{h2})^{\wedge} (X_{h3})^{\wedge} (X_{h4})^{\wedge})$ of fig. 4) is made by comparing **(or selecting)** (d_i is a difference which corresponds to D_m that is used for comparing through inequality operators the threshold "r" in "the fifth step" in col. 14, lines 26-35) said corresponding correlation value (Fig. 4: X_{h1} in equation 17 can be replaced with the difference d_i which is selectable component as mentioned in col. 11, lines 57-59 and col. 11, lines 7-9.) to said first threshold value ("r" in col. 13, lines 33-54 is a threshold value used in each channel. Note that the difference has "r" for each channel as shown by 4 equations in col. 13, lines 40-47.) and to said correlation values (Fig. 4: (X_{h2}), (X_{h3}), (X_{h4})) for corresponding (by their location in the image) pixels of other m-1 (two) high frequency channels $((X_{h3})^{\wedge} (X_{h4})^{\wedge})$ of fig. 4).

Regarding claim 7, Li et al. discloses the method according to claim 1, wherein each of said picture elements (pixels) (Window of five pixels in col. 6, lines 29,30.) is represented by a scalar value ("intensity" in col. 1, line 26) characterizing, for example, image intensity at said pixel (Window of five pixels in col. 6, lines 29,30.).

Regarding claim 8, Li et al. discloses the method according to claim 7, wherein said scalar value ("intensity" in col. 1, line 26) is calculated for each pixel (Window of five pixels in col. 6, lines 29,30.) by multiplication (equation 6 in col. 7, lines 40-42 multiplies a pixel x_{l1}) of said pixel value (The window of five pixels in col. 6, lines 29,30 corresponds to four terms x_{l1} ,x_{l2} ,x_{l3} ,x_{l4} in equation 6.) by a weighted ("w_{i1}" in equation 6 is multiplied with x_{l1}.) sum (Equation 6 is a sum of weights.) of its neighboring pixels (Equation 6 has neighboring pixels x_{l1} ,x_{l2} ,x_{l3} ,x_{l4} .).

Regarding claim 9, Li et al. discloses the method according to claim 8, wherein m (three) of said n-1 high frequency channels ($((X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge})$ of fig. 4), where $2 \leq m \leq n-1$, are different from one another in a direction of their principal passing only ($((X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge})$ of fig. 4 are filtered based on directions for each channel as mentioned in col. 10, lines 2,3.) and anisotropic weights (w_{i1} w_{i2} w_{i3} w_{i4} in equation 6 are weights that correspond to the 4 directions shown in figure 2.) are used for calculating said weighted sum (Equation 6 is a sum of weights.) of said neighboring pixels (Equation 6 has neighboring pixels x_{l1} ,x_{l2} ,x_{l3} ,x_{l4} .), a direction (90° in fig. 2) of said anisotropy (4 directions shown in figure 2) corresponding to said direction (90° in fig. 2) of principal passing for a corresponding processed frequency channel (Any of the four branches from image X_{l0} of fig. 4 can be used for the 90° direction as mentioned in col. 10, lines 2-10.).

Regarding claim 10, Li et al. discloses the method according to claim 7, wherein said threshold value ("r" in col. 13, lines 33-54 is a threshold value used in each channel.) for each of said n-1 high frequency channels ($(X_{h1})^{\wedge}$ $(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge}$) of fig. 4) is determined (equation "r" in col. 13, line 35 is an equation for calculating the threshold.) by analyzing ("refinement" of an image is chosen by an operator in col. 11, lines 54,55 and 63-66.) distribution of pixel values (Pixel values are arranged in one of four directions as shown in fig. 2 that are used to determine the threshold "r" as mentioned in col. 13, lines 8-35.) in an image ("image A" in col. 13, line 6 is an image that will be processed using the above filter level 1.) of a corresponding processed frequency channel (Any of the four channels from X_{l0} correspond to a "chosen one of the four different directions" in col. 12, lines 23-28 and col. 13, lines 9,10.)

Claim 11 has been addressed in claims 1 and 10.

Regarding claim 12, Li et al. discloses the method according to claim 1, wherein said picture element (pixel) (Window of five pixels in col. 6, lines 29,30.) is represented by a vector (The window of five pixels has features shown in fig. 2 that has one pixel X_0 and four neighboring pixels that are represented by 4 directional arrows.)

Regarding claim 13, Li et al. disclsoes the method according to claim 12, wherein said correlation value (Fig. 4: (X_{h1}) or d_i is used for determining a difference or similarity between pixels as mentioned in col. 8, lines 29-43 and col. 11, lines 7-15.) for each pixel (Each pixel forms window of five pixels in col. 6, lines 29,30.) is calculated as a scalar product (X_{l0} is a scalar product that is a product of vector directions and a weighted sum. Note that X_{l0} is used as an input of fig. 4 to generate the correlation values (X_{h1}) or d_i.) of said pixel vector (The window of five pixels has features shown in fig. 2 that has one pixel X_0 and four neighboring pixels that are represented by 4 directional arrows.) by a weighted sum (The "+" sign in figure 3 is a weighted sum of 4 vectors of the four neighboring pixels.) of vectors representing its neighboring pixels.

Claim 14 was addressed in claim 9.

Regarding claim 15, Li et al. discloses the method according to claim 12, wherein said threshold value ("r" in col. 13, lines 33-54 is a threshold value used in each channel.) for each of said n-1 high frequency channels ((X_{h1})^ (X_{h2})^ (X_{h3})^ (X_{h4})^) of fig. 4) is determined by analyzing (An operator can choose a parameter or filter level from a parameter or level set as mentioned in col. 11, line 64-66 and col. 13, lines 1-7 using an initial image.) distribution (selectable kernel length of pixels in col. 15, lines 40-50) of absolute values of vectors (Pixel values are arranged in "each direction" based on the selectable parameter set in col. 15, lines 24-31 and each direction is based on an absolute value as mentioned in col. 13, lines 8- 11.) representing pixels of an image of a corresponding processed frequency channel channel (Any of the four channels from

X_{l0} correspond to a "chosen one of the four different directions" in col. 12, lines 23-28 and col. 13, lines 9,10.).

Claim 16 has been addressed in claim 15.

Regarding claim 17, Li et al. discloses the method according to claim 1, wherein correlation values (Fig. 4: (X_{h2}), (X_{h3}), (X_{h4})) for several neighboring pixels (Fig. 4: (X_{h2}), (X_{h3}), (X_{h4}) can be replaced with d_2,d_3,d_4 of fig. 3 as mentioned in col. 11, lines 7-10 which are based on neighboring pixels in col. 6, lines 20-59.) are smoothed (d_2,d_3,d_4 are lowpass filtered "subimages" in col. 6, lines 27-32 and 52,53. Note that the lowpass filtering is a smoothing operation mentioned in col. 6, lines 24-27.) before ((X_{h2}), (X_{h3}), (X_{h4}) of fig. 4 can be replaced with d_2,d_3,d_4 of figure 3 which is smoothed and used as inputs to generate the weights W_{h2} W_{h3} W_{h4} of fig. 4.) said forming said weighting coefficients (Fig. 4: W_{h1} W_{h2} W_{h3} W_{h4}), said smoothing being implemented at least in one (All of the high frequency channels perform the same smoothing operation for forming a respective weight.) of n-1 high frequency channels((X_{h1})^ (X_{h2})^ (X_{h3})^ (X_{h4})^) of fig. 4).

Claim 19 has been addressed in claim 17.

Regarding claim 20, Li et al. discloses the method according to claim 1, wherein said original image (fig. 3: X_0) is a p-dimensional matrix ("(3D)" in col. 16, lines 4-6)) of said picture elements (Window of five pixels in col. 6, lines 29,30.), where p is greater than or equal to 3.

Regarding claim 21, Li et al. discloses the method according to claim 1, wherein different threshold value[s] ("r" in col. 13, lines 33-54 is a threshold value that can be modified according to σ in col. 13, line 51.) **is** used for different parts of said image ("r" is an average of an image in four directions as mentioned in col. 13, lines 8-20 and 38,39.), said different threshold value[s] (σ in col. 13, line 51.) being used to form said weighting coefficients (Fig. 4: W_{h1} W_{h2} W_{h3} W_{h4} correspond to the weight W(i,j) in col. 14, lines 26-35. Note that the weight W(i,j) is based on a function D_m that uses the different or modified threshold value σ shown by the equations in col. 13, lines 40-50.) at least in one of said n-1 high frequency channels.

Regarding claim 22, Li et al. discloses the method according to claim 21, wherein a picture element (One of five pixels from a window of pixels.) of said picture elements (Window of five pixels in col. 6, lines 29,30.) is represented by a scalar value ("intensity" in col. 1, line 26) and said threshold value[s] ("r" in col. 13, lines 33-54 is a threshold value that can be modified according to σ in col. 13, line 51.) for said different parts of said image ("r" is an average of an image in four directions as mentioned in col. 13, lines 8-20 and 38,39.) and different high frequency channels ($(X_{h1})^{\wedge}$ $(X_{h2})^{\wedge}$ $(X_{h3})^{\wedge}$ $(X_{h4})^{\wedge}$ of fig. 4) are determined (filtered using high pass filters $f_{h1}(X_{l0})$ $f_{h2}(X_{l0}))$ $f_{h3}(X_{l0}))$ $f_{h4}(X_{l0})$ of fig. 4) by analyzing ("refinement" of an image's parameters are chosen by an operator in col. 11, lines 54,55 and 63-66.) distribution of pixel values (kernel length of pixels that correspond to a directional parameter in col. 15, lines 30-35) in a corresponding part (edges are filtered) of said image (fig. 3: X_0) of a corresponding frequency channel (The high frequency channels are used for filtering edges.).

Claim 23 has been addressed in claim 22.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (US Patent 5,602,934 A) in view of Matama (US Patent 5,739,922 A).

Li et al. does not teach the limitations of claim 4, but does suggest a function with weights and a threshold as mentioned in col. 7, lines 58-60 col. 14, lines 26-36 and col. 15, lines 37-39.

Regarding claim 3, Matama teaches a function with weights and a threshold as suggested by Li et al. of a weighting coefficient (Fig. 14A:gain M on the vertical axis) takes a minimal value (on the vertical axis) for correlation values (RESTRICTION side of fig. 14A on the ϵ axis.) that are significantly smaller than said first threshold value (Fig. 14 A:"Th"); said weighting coefficient (Fig. 14A:gain M on the vertical axis) smoothly increases (towards the right) from its minimal value (on the vertical axis) to its maximal value (Flat portion of the graph above the ϵ axis in fig. 14A.) for correlation values that are close(The graph increases through the first threshold "Th",) to said first threshold value (Fig. 14 A:"Th"); and said weighing coefficient (Fig. 14A:gain M on the vertical axis) takes its maximal value(Flat portion of the graph above the ϵ axis in fig.

14A.) for correlation values that are significantly larger than said first threshold value (EMPAHASIS side on the ϵ axis of fig. 14A).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to to modify Li et al.'s teaching of a function with Matama's function, because Matama's function produces an image with "better image quality (Matama, col. 18, lines 4-6)."

Allowable Subject Matter

11. Claims 4 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 4 and 18 are allowable because the prior art does not teach or suggest a function that gradually increases and decreases with two thresholds for correlation values, which a second threshold determines the point that the function decreases, that correspond to a correlation value, which identifies the amount of weighting to apply.

The closest prior art is Mancuso et al. (US Patent 6,175,657 B1) that has a decreasing function in fig. 3 with two thresholds th1 and th2 and corresponding weights Ki, but does not teach a function that gradually increases and decreases as claimed.

Another prior art is Takeshima et al. (US Patent 6,252,983 B1) which does have the claimed function of an increasing function followed by a decreasing function with

corresponding thresholds A and B in fig. 16. However, the thresholds are based on finding the frequency of video signals and not correlation values.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario-Vasquez whose telephone number is 703-305-5431. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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